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HYDRATE IN THE HEAT

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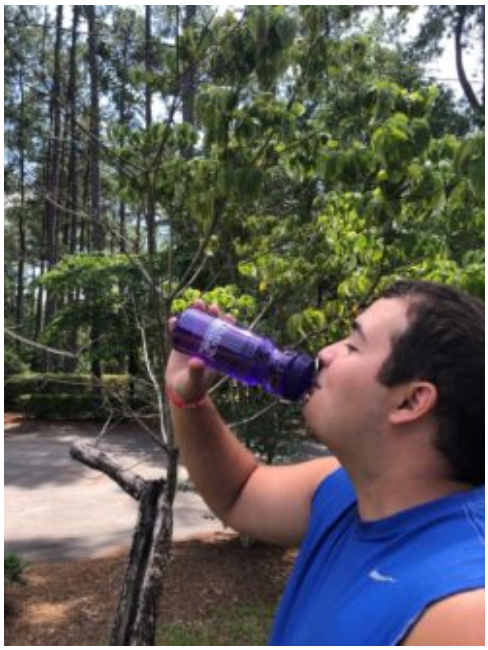
Summertime is hot. And exercising in hot weather makes us sweat. But why? And how do we replenish what we lose in sweat to stay hydrated?

Our bodies work best when kept at a temperature of about 98.6 degrees Fahrenheit. When we get hotter than that, our brains signal the body to cool itself off. The hypothalamus is the part of the brain that detects temperature and triggers sweat glands located just under the surface of the skin to produce sweat. Sweat is secreted onto the surface of the skin and begins the process of "cooling us off".



We need to replace electrolytes, you can do this by making your own sports drink.
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Imagine a dip in the pool. When we get out of the pool, and we are still wet, the breeze passes over our skin, and the water starts to evaporate. Sometimes we even get a little shiver as our body temperature decreases. If we don't dry off, we can sit in the sun for a while and stay relatively comfortable. That's because there is plenty of water on our skin that is evaporating, taking heat with it, and helping us regulate our body temperature. When there's no pool to dip into, our body makes sweat, which puts water on our skin, evaporates over time, and cools our body temperature.

But sweat is not just water. It also contains some minerals called electrolytes. The electrolytes direct where the water in our body goes. Sodium and potassium are the electrolytes in sweat. These minerals move the water in sweat glands to the outer surface of the skin through tiny holes called pores. As a result, when we sweat, we don't just lose water; we also lose sodium and potassium. We all know that we need to replace water that is lost when we are sweating a lot. But if we are involved in vigorous exercises, like running or working hard in the hot sun, for prolonged periods of time (more than an hour), we will also need to replace electrolytes. One way to do this is with sports drinks.

Sports drinks contain water, sodium, potassium, and even a little carbohydrate to provide some energy during intensive activity. But timing is everything. Sports drinks are needed during periods of intense exercise or hard physical work that causes us to sweat longer than an hour. Performance and hydration will not be affected by drinking sports drinks before or after those activities. In fact, the carbohydrate in the sports drinks could add unwanted calories that aren't needed when we're just going about our regular daily activities. When we're not actively sweating, water alone will do the trick to keep us hydrated and healthy.

There are many kinds of commercial sports drinks on the market. Gatorade is probably the most popular. But sports drinks can also be made at home. This will save lots of money if you work outdoors in hot

weather, are a frequent exerciser, or an athlete with long workouts and training days. Here's an easy recipe that you can use to make your own.

Lemon-lime Sports Drink

1/4 cup lime juice
1/4 cup lemon juice
2 cups water
1/8 teaspoon salt
2 ½ tablespoons sugar

Combine all ingredients. Stir well. Store 5-7 days in the refrigerator.

References:

1. Robinson, Sid and A. H. Robinson. 1954. Chemical Composition of Sweat. Physiological Reviews. 34:2;202-220.
2. What's sweat? Accessed at **https://kidshealth.org/en/kids/sweat.html on July 18**, 2020.
3. Edelman, I.S. and J. Leibman. 1959. Anatomy of body water and electrolytes. American Journal of Medicine. 27:2;256-277.
4. Sherriffs, S.M. 2009. Hydration in sport and exercise: water, sports drinks, and other drinks. Nutrition Bulletin. 34:4;374-379.

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